REMARKS

The present application relates to hybrid maize plant and seed 39W54. Claims 1-32 are currently pending in the present application. Applicant respectfully requests consideration of the following remarks.

Detailed Action

The Examiner states the Amendment of December 27, 2001 and accompany arguments have overcome all outstanding rejections. In addition, the Examiner states that Applicant's statement regarding the condition of the deposit in the Amendment of December 27, 2001 have overcome the rejections under 35 U.S.C. § 112, first paragraph.

The Examiner states that 35 U.S.C. § 112, first paragraph rejections have been overcome by Applicant's statement regarding deposit. Applicant herein is submitting amendments to claims 1, 5 and 7 and the specification on pages 7 and 40 to include the proper ATCC number(s).

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 5-8, 10-19, 21 and 23-32 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

The Examiner states that claim 5 is indefinite in its recitation in line 3 of "the tissue". Applicant has now amended the claim to read "the tissue culture" as suggested by the Examiner, thereby alleviating rejection to claim 5 and dependent claims 6 and 7.

Claim 6 stands rejected as being indefinite in its recitation of "the ... protoplasts". Applicant respectfully traverses this rejection. The use of the terminology "protoplasts" is included within claim 5 as stated "tissue culture of regenerable cells". Applicant further submits that a person having skill in the art would associate "protoplasts" with the "tissue culture of regenerable cells". Further, the specification states "the term plant includes plant cells, plant protoplasts, plant cell tissue cultures from which maize plants can be regenerated, plant calli, plant clumps, and plant cells that are intact in plants, or parts of plants, such as embryos, pollen, ovules, flowers, kernels, ears, cobs, leaves, seeds, husks, stalks, roots, root tips, anthers, silk and the like" (page 27, specification). These are just a few of the examples of tissue cultures that are capable of producing somatic embryogenesis and plant regeneration that are well known to those

of skill in the art and are definite in their terminology. Reconsideration is respectfully requested. However, in order to expedite prosecution Applicant has now amended the claim to read "of the tissue culture" as suggested by the Examiner, thereby alleviating this rejection.

Claims 12, 25 and 29 and dependent claims 13-15, 26-28 and 30-32, are indefinite in their recitation of "plant according to claim 2 [or 20] contains ... transgenes [or transferred by backcrossing]". Applicant has now amended claims 12, 25 and 29 to read "further comprises" instead of "contains" as suggested by the Examiner. Applicant respectfully submits claims 12, 25 and 29 and dependent claims 13-15, 26-28 and 30-32 are now in condition for allowance.

Claims 11, 15, 19, 24, 28 and 32 are indefinite in their recitation of "superior", "above average" and "particularly suited", as the Examiner states these terms are unduly narrative and imprecise. Applicant traverses this rejection. Each of these claims recites two requirements, first that 39W54 be an ancestor of the plant and second, that the claimed plant be "capable of expressing a combination of at least two 39W54 traits" selected from a Markush grouping. Applicant notes that the Markush listing is directed to "39W54" traits. Thus, Applicant submits that the recitation of 39W54 traits clearly delineates the traits listed as those which are from 39W54 or ancestors thereof. The recitation of "39W54" in front of the term traits clearly indicates that the traits must be originating from 39W54. This is particularly so since the claim also requires that the plant 39W54 must be an ancestor of the claimed plant. Applicant further submits that the adjectives used within the claims are not unduly narrative or imprecise as they do clearly characterize and positively recite the degree of expression of the particular traits within the application in Table 1 (pages 16-18). This terminology is well known in the art and commonly used within breeding techniques of hybrid plants. Applicant respectfully submits that this language is not narrative nor imprecise and would be understood by one in the art and is the terminology of use within the art. Therefore, Applicant respectfully requests reconsideration.

Claims 10, 14, 18, 23, 27 and 31, and dependents, are indefinite in their recitation of "[t]he maize breeding program of claim 9 [or 13 or 17 or 22 or 26 or 30]". Applicant respectfully traverses this rejection. The claims and their dependents actually refer to previous claims which state "method for developing a maize plant in a maize breeding program". Therefore, Applicant respectfully submits that claims 10, 14, 18, 23, 27 and 31, and dependents, are not indefinite and are in condition for allowance.

Claims 8 and 21 are indefinite "for characterizing the male fertile plant of claim 2 [or claim 20] as male sterile". Applicant respectfully traverses this rejection. Applicant notes that large scale commercial hybrid maize production requires the use of some form of male sterility system which controls or inactivates the male fertility (page 2, specification). Applicant respectfully submits that the specification supplies an extensive description and definition of "male sterility" in the hybrid 39W54 (pages 2-4, specification). The present invention teaches how a "reliable method of controlling male fertility in plants offers the opportunity for improved plant breeding" (page 2, specification). It is essential to understand that a hybrid maize seed that is produced using cytoplasmic male-sterile (CMS) inbreds. "Plants of a CMS inbred are male sterile as a result of factors resulting from the cytoplasmic, as opposed to the nuclear, genome. Thus, this characteristic is inherited exclusively through the female parent in maize plants, since only the female provides cytoplasm to the fertilized seed. CMS plants are then fertilized with pollen from another inbred that is not male-sterile" (page 2, specification). Applicant respectfully submits that claims 8 and 21 clearly define and distinctly claim the subject matter Applicant regards as the invention.

The Examiner states that claims 12, 16, 25 and 29, and dependent claims 13-15, 17-19, 26-28 and 32, are indefinite in their recitation of "hybrid maize plant according to claim 2 [or 20] which lacks antecedent basis". Applicant has now amended claims 12, 16, 25 and 29 by deleting "hybrid" as suggested by the Examiner, thereby obviating this rejection.

In light of the above remarks, Applicant submits that claims 5-8, 10-19, 21 and 23-32 clearly define and distinctly claim the subject matter Applicant regards as the invention. Applicant respectfully requests reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, second paragraph.

Issues Under 35 U.S.C. § 102/103

Claims 11, 15, 19, 24, 28 and 32 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Morgan (U.S. Patent 5,824,848).

Applicant respectfully traverses this rejection and requests reconsideration of claims 11, 15, 19, 24, 28 and 32. Applicant submits that the claims do not simply recite traits, such as a relative maturity of 73, but instead recites these specific traits only to the extent that they are

"39W54" traits; thereby coming solely from the seed/germplasm of 39W54. When looking at maize plants it would be possible for one ordinarily skilled in the art to find many traits that are similar between varieties such as the disease resistance or growth habit. Nonetheless, the claim also recites that the claimed plant must have 39W54 as an ancestor further indicating that these traits must originate from the 39W54 plant not F361. In response to the Examiner's contention that one could not distinguish the claimed plant from the prior art which shows each of these traits, Applicant submits that one can easily tell by reference to the plants breeding history or its molecular profile whether the plant did indeed have plant 39W54 as an ancestor and expressed two or more "39W54" traits. Further, any phenotypic trait that is expressed is a result of a combination of all of the genetic material present in the plant, and 39W54 will have its own unique genetic profile that it will contribute to a breeding program. This unique genetic background will then result in the claimed plant and this profile along with its combination with other plants will result in a unique combined genetic profile that is the product claimed. The resulting plant will not just have traits, but "39W54" traits which will be a unique combination of genetic material.

Applicant further asserts that although other plants may possess similar traits that does not then make the claimed invention obvious, if not anticipated by Morgan. Once again Applicant would like to point out that the claimed invention of 39W54 and the cited reference of Hybrid F361 are not the same inventions. Applicant submits that the claimed plant cannot be rendered obvious or lacking novelty, as it possesses a unique combination of traits, which confers a unique combination of genetics. Further, there is no expectation of success that the crossing of the Hybrid F361 with some yet to be identified plant would yield a plant with two of the traits enumerated in the claimed invention because that particular plant did not begin with the claimed seed 39W54 which is essential. Without any teaching about dominance, or heritability of such traits it cannot be said that there is an expectation of success that the combination of plants would achieve the combination enumerated in the claimed invention, to say nothing of issues such as inbreeding depression etc. Applicant asserts that it is not the phenotypic characteristics alone that are claimed and taught in the instant invention. It is a combination of physiological and morphological characteristics, as claimed, which make the present Hybrid non-obvious and not anticipated over Morgan. Additionally, as evidenced in Tables 1-4, several significant differences exist between hybrid F361 and 39W54. As shown in Table 4 of the claimed

invention (page 26), the comparative relative maturity values and the growing degree units show statistically significant differences from Tables 1-2 of Hybrid F361 (columns 11-12). Not only are these two hybrids significantly different with respect to many traits, but the genetic profile that is responsible for those differences that each would contribute to a breeding program as ancestors would also be different and unique, as would the descendants. Further, In re Thorpe, states that "a product by process claim may be properly rejected over prior art teaching the same product produced by a different process", as noted by the Examiner. 227 U.S.P.Q. 964, 966 (Fed. Cir. 1985). However, Applicants submit that this is not the same product physiologically or morphologically as the cited prior art as can be evidenced by one skilled in the art through analysis of the data tables in each.

Finally, as discussed above, 39W54 and plants derived from 39W54 are clearly differentiated from F361. It must be recognized that the 39W54-derived plants are themselves unusual and a non-obvious result of a combination of previously unknown and non-obvious genetics. In addition to the phenotypic traits described herein, each 39W54-derived plant has an additional benefit unique to each specific cross using 39W54 as one of its ancestors. In addition, it is impermissible to use hindsight reconstruction and the benefit of Applicant's disclosure to pick among pieces which are present in the art, there must be some suggestion to make the combination and an expectation of success. In re Vaeck, 20 U.S.P.Q.2d 1434 (Fed. Cir. 1991). Thus, they deserve to be considered new and non-obvious compositions in their own right as products of crossing when 39W54 is used as a starting material.

In light of the above, Applicant respectfully requests the Examiner reconsider and withdraw the rejection to claims 11, 15, 19, 24, 28 and 32 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Morgan (U.S. Patent 5,824,848).

Applicants acknowledge that claims 1-10, 12-14, 16-18, 20-23, 25-27 and 29-31 are deemed free of the prior art. Applicant further acknowledges that claims 1-4, 9, 20 and 22 are allowed.

Conclusion

In conclusion, Applicant respectfully requests reconsideration.

No additional fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Reconsideration and allowance is respectfully requested.

Respectfully submitted,

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Application No. 09/490,394

AMENDMENT — VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification

Please replace the paragraph at page 7, beginning at line 27 with the following:

According to the invention, there is provided a hybrid maize plant, designated as 39W54, produced by crossing four Pioneer Hi-Bred International, Inc. proprietary inbred maize lines (GE541031 x GE533274 x GE533275) x GE492318. These lines, deposited with the American Type Culture Collection, (ATCC), Manassas, Virginia 20110, have accession numbers PTA-4290, PTA-4284, PTA-4285, and PTA-4277, for GE541031, GE533274, GE533275, and GE492318, respectively, which was deposited with ATCC on May 6, 2002. The seeds deposited with the ATCC were taken from the deposit maintained by Pioneer Hi-Bred International, Inc., 800 Capital Square, 400 Locust Street, Des Moines, Iowa 50309-2340 since prior to the filing date of this application. This invention thus relates to the hybrid seed 39W54, the hybrid plant produced from the seed, and variants, mutants and trivial modifications of hybrid 39W54. This invention also relates to methods for producing a maize plant containing in its genetic material one or more transgenes and to the transgenic maize plants produced by that method. This invention further relates to methods for producing maize lines derived from hybrid maize line 39W54 and to the maize lines derived by the use of those methods. This hybrid maize plant is characterized by very early high yield.

Please replace the paragraph at page 27, beginning at line 32 with the following:

With the advent of molecular biological techniques that have allowed the isolation and characterization of genes that encode specific protein products, scientists in the field of plant biology developed a strong interest in engineering the genome of plants to contain and express foreign genes, or additional, or [modifed]modified versions of native or endogenous genes (perhaps driven by different promoters) in order to alter the traits of a plant in a specific manner. Such foreign, additional and/or modified genes are referred to herein collectively as "transgenes". Over the last fifteen to twenty years several methods for producing transgenic

plants have been developed, and the present invention, in particular embodiments, also relates to transgenic versions of the claimed hybrid maize line 39W54.

Please replace the paragraph at page 40, beginning at line 2 with the following:

Applicant has made a deposit of at least 2500 seeds of Hybrid Maize Line 39W54 with the American Type Culture Collection (ATCC), Manassas, Va. 20110 USA, ATCC Deposit No. PTA-4268. [A deposit of the seed of hybrid 35G41 is and has been] The seeds deposited with the ATCC on May 3, 2002 were taken from the deposit maintained by Pioneer Hi-Bred International, Inc., 800 Capital Square, 400 Locust Street, Des Moines, Iowa 50309-2340, since prior to the filing date of this application. Access to this deposit will be available during the pendency of the application to the Commissioner of Patents and Trademarks and person determined by the Commissioner to be entitled thereto upon request. Upon allowance of any claims in the application, the Applicant(s) will make available to the public without restriction a deposit of at least 2500 seeds of hybrid 39W54 with the American Type Culture Collection (ATCC), Manassas, Virginia 20110. The seeds deposited with the ATCC will be taken from the same deposit maintained at Pioneer Hi-Bred and described above. Additionally, Applicant(s) will meet all the requirements of 37 C.F.R. § 1.801 - 1.809, including providing an indication of the viability of the sample when the deposit is made. This deposit of Hybrid Maize Line 39W54 will be maintained without restriction in the ATCC Depository, which is a public depository, for a period of 30 years, or 5 years after the most recent request, or for the enforceable life of the patent, whichever is longer, and will be replaced if it ever becomes nonviable during that period.

In the Claims

Claims 1, 5-7, 12, 16, 25 and 29 have been amended as follows:

1. (Amended)

Hybrid maize seed designated 39W54, representative seed of said hybrid 39W54 having been deposited under ATCC accession number PTA-4268.

5. (Amended)

A tissue culture of regenerable cells of a hybrid maize plant 39W54, representative seed of said hybrid maize plant 39W54 having been deposited under ATCC accession number PTA-4268, wherein the tissue culture regenerates plants capable of expressing all the morphological and physiological characteristics of said hybrid maize plant 39W54.

6. (Amended)

A tissue culture according to claim 5, [the] cells or protoplasts of the tissue culture being from a tissue selected from the group consisting of leaves, pollen, embryos, roots, root tips, anthers, silks, flowers, kernels, ears, cobs, husks, and stalks.

7. (Amended)

A maize plant, or its parts, regenerated from the tissue culture of claim 5 and capable of expressing all the morphological and physiological characteristics of hybrid maize plant 39W54, representative seed having been deposited under ATCC accession number PTA-4268.

12. (Amended)

A [hybrid] maize plant according to claim 2, wherein the genetic material of said plant [contains]further comprises one or more transgenes.

16. (Amended)

A [hybrid] maize plant according to claim 2, wherein the genetic material of said plant [contains]further comprises one or more genes transferred by backcrossing.

25. (Amended)

A [hybrid] maize plant according to claim 20, wherein the genetic material of said plant [contains]further comprises one or more transgenes.

29. (Amended)

A [hybrid] maize plant according to claim 20, wherein the genetic material of said plant [contains]further comprises one or more genes transferred by backcrossing.